

Hibiscus: A Multipurpose Medicinal Plant

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The continent of Africa made up of numerous countries of which Cameroon is part, is naturally endowed with several plant species which have nutritional and medicinal benefits [1] Hibiscus being one of them. The genus Hibiscus consists of about 300 species that are grown throughout the tropical and subtropical regions of the world [2] such as Hibiscus syriacus, Hibiscus sabdariffa, Hibiscus rosa-sinensis, just to name a few. The various species of this plant grow in different climatic zones and all provide diverse medicinal or therapeutic benefits for the population in these areas in which they thrive. This is because they contain various ingredients or components such as fruit acids [3], antioxidants [4] and polyphenolic compounds [5]. These substances have positive effects in the treatment of ailments as the term “medicinal” implies, which simply means they possess healing properties.

Most species of Hibiscus are usually consumed in the form of teas made from its flowers, leaves, and roots [6]. For instance, “Foléré” is one of the most common tea made from dried up Hibiscus leaves. This tea is common to West African countries, and is mostly referred to as a “juice” rather than tea, because of its refreshingly mouth-watering savor [7]. For example in Cameroon, it is used as a refreshing beverage often served chilled but can also be served without being refrigerated. “Foléré” can lower cholesterol levels and studies have shown that drinking “Foléré” regularly can have a positive effect on the liver [8]. That is, consuming “Foléré” may improve liver conditions for example, liver steatosis, which is a buildup of fat in the liver. Also, in the rainy and cold months, “Foléré” can aid in preventing respiratory infections due to its high content of vitamin C [9].

In addition to casual consumption, Hibiscus is also used as an herbal medicine to treat hypertension, hypercholesterolemia, cancer progression [6] and diabetes [7] due to its polyphenolic content (saponins, flavonoids, and tannins) [3]. Furthermore, it might be helpful in

circulating the blood to hair follicles which can aid hair growth. The leaves and flowers of Hibiscus (i.e Hibiscus rosa sinensis) contain antioxidants and vitamins that are required for the formation of melanin, the pigment that gives hair it's unique color [4]. Topical application of hibiscus leaf extract and gentle rubbing action on the skin enhances blood circulation, which as mentioned above may have some effect on hair growth [10].

Again, the fruit acids in some species such as Hibiscus sabdariffa might work like a laxative [3]. Polyphenols present in this plant, and in combination with other plant extracts have beneficial effects on blood pressure and lipid profile [11]. The antibacterial properties of the methanolic extract of its calyxes have been evaluated against various Gram-negative and Gram-positive bacteria, such as Pseudomonas fluorescence and Listeria monocytogenes. Also, the antifungal activity has been as well evaluated against C. tropicalis, C. albicans, and Aspergillus flavus among others. It was found that the antimicrobial properties of Hibiscus Sabdariffa calyx extract are attributed to the presence of phenolic compounds [12]. Joshi et al. on their part demonstrated that aqueous decoction of these calyxes exhibited antiviral properties against hepatitis A, feline calicivirus, and murine norovirus in a dose-dependent response. This antiviral activity was attributed to the synergistic effect of polyphenols and organic acids [10].

The potential anticancer properties of Hibiscus sabdariffa calyx extracts have been evaluated using Human Umbilical Vein Endothelial Cells (HUVECs) [13], and a human breast cancer cell line (MCF-7) [14].

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It was shown that the aqueous extract exhibited selective cytotoxicity against the MCF-7 cell line, while the methanolic extract repressed melanoma cell growth, migration, and tube formation in a dose-dependent response [13]. This was due to the apoptotic properties of various phytochemicals in the extract, mediated by down-regulation of P13/Akt and Ras/MAPK pathways [13]. Other species for example, *Hibiscus syriacus*, are used as remedies in many diseases such as amoebic colitis, hemorrhoids, hemorrhoidal bleeding, migraine, vomiting, diarrhea and dyspepsia among others [9].

Therefore, these few therapeutic benefits among many others can be harnessed or exploited and used to solve health issues from a more natural approach. That is by encouraging the consumption of hibiscus teas or drinks and its use as topical application. It may also serve as a base for synthesis of new molecules.

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